

WHAT IS CLAIMED IS:

- 1 1. A headliner assembly for a vehicle, the headliner assembly
2 comprising:
3 a headliner body having first and second surfaces, the first surface
4 being configured to face toward a roof of the vehicle and the second surface being
5 disposed opposite the first surface; and
6 a flexible air duct attached to the first surface, the flexible air duct
7 having an inlet for receiving pressurized air and a duct portion that channels the
8 pressurized air;
9 wherein the flexible air duct inflates when air is provided through the
10 inlet and at least partially deflates when air is not provided through the inlet.
- 1 2. The headliner assembly of claim 1 wherein the flexible air
2 duct includes a first flexible layer that inhibits air leakage and a second flexible layer
3 attached to and thicker than the first flexible layer, the second flexible layer being
4 partially compressed to increase density of the second flexible layer and to maintain
5 a desired shape when air is not provided through the inlet.
- 1 3. The headliner assembly of claim 2 wherein the first flexible
2 layer is a polyethylene film.
- 1 4. The headliner assembly of claim 2 wherein the second flexible
2 layer is a lofted polyester material.
- 1 5. The headliner assembly of claim 2 wherein the second flexible
2 layer is a woven material.
- 1 6. The headliner assembly of claim 1 further comprising a
2 support member for supporting a section of the flexible air duct when the flexible
3 air duct is at least partially deflated.

1 7. The headliner assembly of claim 1 wherein the flexible air
2 duct is attached to the first surface by an adhesive.

1 8. The headliner assembly of claim 1 wherein the flexible air
2 duct is attached to the first surface by vibration welding.

1 9. The headliner assembly of claim 1 further comprising a vent
2 aperture extending through the headliner body that receives pressurized air from the
3 flexible air duct.

1 10. A headliner assembly for a vehicle, the headliner assembly
2 comprising:
3 a headliner body having a plurality of material layers disposed
4 substantially parallel to each other, the headliner body including:
5 an upper surface disposable adjacent to a vehicle roof;
6 a lower surface disposed opposite the upper surface;
7 a vent aperture disposed in the plurality of material layers; and
8 a speaker disposed in the plurality of material layers; and
9 a flexible air duct having a perimeter attached to the upper surface to
10 define an air conduit;
11 wherein the flexible air duct is configured to inhibit resonance in
12 response to an audio signal from the speaker.

1 11. The headliner assembly of claim 10 wherein the flexible air
2 duct is inflated when pressurized air is provided through an inlet and partially
3 deflated when pressurized air is not provided through the inlet.

1 12. The headliner assembly of claim 11 wherein the flexible air
2 duct inhibits noise transmission when deflated.

1 13. The headliner assembly of claim 10 wherein the flexible air
2 duct has a first flexible layer for inhibiting air leakage and a second flexible layer

3 disposed opposite the first flexible layer, the second flexible layer having a
4 perimeter attached to the upper surface to define the air conduit.

1 14. The headliner assembly of claim 13 wherein the second layer
2 is partially compressed to retain a predetermined shape.

1 15. A headliner assembly for a vehicle, the headliner assembly
2 comprising:
3 a headliner body including:
4 a first surface disposed adjacent to a roof of the vehicle;
5 a second surface disposed opposite the first surface; and
6 a vent aperture passing through the first and second surfaces;
7 and
8 a flexible body including:
9 a flexible insulation layer for providing acoustic insulation;
10 and
11 a flexible barrier layer for inhibiting air leakage disposed
12 between the flexible insulation layer and the first surface;
13 wherein a portion of the flexible barrier layer is attached to the first
14 surface to define a flexible air duct that inflates when air is provided through an inlet
15 and deflates when air is not provided through the inlet.

1 16. The headliner assembly of claim 15 wherein the flexible
2 insulation layer covers substantially all of the first surface of the headliner body.

1 17. The headliner assembly of claim 15 wherein the flexible
2 barrier layer is disposed on a section of the flexible insulation layer.

1 18. The headliner assembly of claim 15 wherein an area of the
2 flexible barrier layer located apart from the flexible air duct is perforated.

1 19. The headliner assembly of claim 15 wherein the flexible
2 insulation layer is partially compressed to retain a shape in an area adjacent to the
3 flexible air duct.

1 20. The headliner assembly of claim 15 further comprising a
2 speaker disposed in the headliner body wherein the flexible body does not resonate
3 in response to an audio signal from the speaker.